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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/598,290	08/23/2006	Kaoru Hirata	SUG10169	2397
24203	7590	09/19/2008		
GRIFFIN & SZIPL, PC SUITE PH-1 2300 NINTH STREET, SOUTH ARLINGTON, VA 22204			EXAMINER MCCALISTER, WILLIAM M	
			ART UNIT 3753	PAPER NUMBER
			MAIL DATE 09/19/2008	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/598,290

**Applicant(s)**

HIRATA ET AL.

**Examiner**

WILLIAM MCCALISTER

**Art Unit**

3753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SE-US)  
Paper No(s)/Mail Date 8/23/2006
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_

## **DETAILED ACTION**

### ***Specification***

1. Claim 1 is objected to because of the following informalities: it should refer to a strain sensor rather than a stain sensor. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 3, 7, 8, 10 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Although paragraph 25 describes "the drift amount" as "the amount of changes of the mass flow due to changes of the fluid pressure", the phrase "output drift to pressure of the mass flow rate sensor part" found in the claims 3 and 7 remains indefinite. Importation of this explanation from the specification into the claim would not yield a definite meaning because it is not clear how changes to the mass flow occur as a result of changes in pressure. Moreover importation would be improper because the language of the specification is seen as exemplary.

### ***Double Patenting***

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 1, 4 and 8-10 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of Ikeda (U.S. Patent No. 7,363,810) in view of James (U.S. Patent Application Publication 2002/0100316).

Claim 1 recites: a corrosion resistant metal made thermal type mass flow rate sensor comprising:

(a) a sensor part comprising

- i. a corrosion resisting metal substrate having a fluid contacting surface, wherein the corrosion resisting metal substrate comprises an outer peripheral part and a central part, wherein the central part comprises a thin plate that has a thickness that is less than the thickness of the outer peripheral part;
- ii. a thin film forming a temperature sensor; and
- iii. a heater mounted on a rear face side of the fluid contacting surface of the corrosion resistant metal substrate;

(b) a sensor base equipped with the sensor part installed thereupon to secure hermeticity, and the corrosion resistant metal substrate is fastened hermetically to the sensor base, wherein the thin film comprises

- i. an insulation film formed on the rear face side of the fluid contacting surface of the corrosion resistant metal substrate;
- ii. a metal film forming the temperature sensor on the insulation film;
- iii. the heater formed on the insulation film; and

- iv. a protection film disposed to cover the insulation film and the metal film.

Ikeda does not disclose a pressure sensor. James teaches that it was known in the art at the time of invention to utilize in such a thermal mass flow sensor: an additional pressure sensor part (52) comprising a thin film (58) forming a strain sensor element (see paragraph 26) installed on the back face side of the fluid contacting surface of the substrate (see FIG 4). James teaches the additional pressure sensor to be used for measuring high flow rates (see paragraph 3). To measure flow rates which exceed the capabilities of Ikeda's temperature sensors, it would have been obvious to one of ordinary skill in the art at the time of invention to utilize a pressure sensor as taught by James.

The other differences between the claims are seen as stylistic, and obvious in light of Ikeda's disclosure.

6. Claim 2 is rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 12 of Ikeda, in view of James (as set forth above).

Claim 12 recites: the outer peripheral part of the sensor part is fixed into a flat fitting groove on a bottom surface of the sensor base.

It would have been obvious to hermetically weld the substrate to the base in light of the disclosure of Ikeda. The other differences between the claims are seen as stylistic, and obvious in light of Ikeda's disclosure.

7. Claims 3 and 7 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of Ikeda, in view of James (as set forth above), and further in view of Kuno (US Patent 3,737,684).

Neither Ikeda nor James discloses correcting output drift to pressure of the mass flow rate sensor part with use of the pressure signal. However, Kuno identifies an accuracy problem associated with pressure and teaches the claimed solution, as best understood (see Kuno, column 9 lines 35-47). It would have been obvious to one of ordinary skill in the art at the time of invention to correct output drift to pressure of the mass flow rate sensor part with the use of the pressure signal in the Ikeda-James device, as taught by Kuno, so as to compensate for error associated with pressure.

The differences between the claims are seen as stylistic, and obvious in light of Ikeda's disclosure.

8. Claims 5 and 11-13 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 4 of Ikeda, in view of James (as set forth above).

Claim 4 recites: a fluid supply device comprising a corrosion resistant metal made thermal type mass flow rate sensor as claimed in claim 2, wherein the corrosion resistant metal made thermal type mass flow rate sensor is mounted on a fluid controller to check flow rate appropriately at the time of fluid control.

The differences between the claims are seen as stylistic, and obvious in light of Ikeda's disclosure.

9. Claim 6 is rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 2 of Ikeda, in view of James (as set forth above).

Claim 2 recites: a corrosion resistant metal made thermal type mass flow rate sensor as claimed in claim 1, further comprising: a fluid inlet for fluids flowing in; a fluid outlet for fluids flowing out; a body, wherein the sensor part fits into the body; and a metal gasket fastened to the sensor base; wherein the body comprises a flow passage formed therein for communicating between, and connecting, the fluid inlet and the fluid outlet; and strain applied to the sensor part when fastening the metal gasket to the sensor base is suppressed by a stiffness of material of the sensor base against which the metal gasket fastens to secure hermeticity between the sensor base and the body.

The differences between the claims are seen as stylistic, and obvious in light of Ikeda's disclosure.

***Claim Rejections - 35 USC § 103***

10. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

12. Claims 1, 2, 4-6 and 8-13 are rejected under 35 U.S.C. 103(a) as being obvious over James in view of Ikeda.

The Ikeda reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by:

(1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(I)(1) and § 706.02(I)(2).

Regarding claim 1, James discloses a sensor for measuring mass flow rate and pressure of fluid, comprising:

- (a) a mass flow rate sensor part comprising
  - i. a substrate (49); and
  - ii. a thin film forming a temperature sensor (22) and a heater (14) installed on the back face side of a fluid contacting surface (50) of the substrate; and
- (b) a pressure sensor part (52) comprising a thin film (58) forming a strain sensor element (see paragraph 26) installed on the back face side of the fluid contacting surface of the substrate (see FIG 4).

James does not disclose the substrate to be made of a corrosion-resistant metal. However, Ikeda teaches that it was known in the art at the time of invention to form a substrate (2) of a mass flow sensor from a corrosion-resistant metal to achieve corrosion resistance and fast response speed therein (see col. 2 lines 35-50). To provide corrosion resistance and fast response speed in James' mass flow sensor, it would have been obvious to one of ordinary skill in the art at the time of invention to form the substrate from a corrosion-resistant metal.

Regarding claim 2, Ikeda teaches that it was known in the art at the time of invention to fit the corrosion-resistant metal substrate into a mounting groove of a corrosion-resistant metal made sensor base such that the fluid contacting surface is exposed outwardly, and the peripheral edge of the corrosion-resistant metal substrate to be hermetically welded to the sensor base (col. 8 lines 16-23). To create a durable interface that is resistant to permeation, it would have been obvious to one of ordinary skill in the art at the time of invention to form the James-Ikeda sensor set forth in the analysis of claim 1 above to incorporate the mounting groove, orientation, and seal as taught by Ikeda.

Regarding claim 4, Ikeda teaches that it was known in the art at the time of invention to utilize a thin film which includes an insulation film formed on the back side of the fluid contacting surface of the corrosion-resistant metal substrate, a metal film that forms the temperature sensor, the heater and a strain sensor element, and a protection film

covering the insulating film and the metal film (see claim 1). It would have been obvious to one of ordinary skill in the art at the time of invention to incorporate such features into the design of the James-Ikeda sensor set forth in the analysis of claim 1, to predictably reduce the risk of inadvertent electrical grounding and to protect the insulating layer from degradation.

Regarding claim 5, Ikeda teaches that it was known in the art at the time of invention to utilize a fluid supply device with such a corrosion-resistant metal made sensor mounted on a fluid controller in order that flow rate of fluid is appropriately checked at a time of fluid control (see claim 6). To check flow rate of fluid at a time of fluid control with the James-Ikeda sensor as set forth in the analysis of claim 1 above, it would have been obvious to one of ordinary skill in the art at the time of invention to use it with such a fluid controller.

Regarding claim 6, Ikeda teaches that it was known in the art at the time of invention to utilize a fluid supply device that employs such a corrosion-resistant metal made sensor, wherein the sensor base is positioned inside a fluid passage of a body equipped with the fluid passage that communicates between a flow-in inlet for fluid and a flow-out outlet for the fluid by installing a metal gasket in order that hermeticity between the body and the sensor base is held by thrusting by the metal gasket through mediation of the sensor base, and at the same time stiffness of a structural component disposed directly above the metal gasket to relatively raise hermeticity between the body and the sensor

base, thus suppressing strain of the mass flow rate sensor part and the pressure sensor part caused by thrusting by the metal gasket (see claim 2). To establish a state of hermeticity in the use of the James-Ikeda sensor as set forth in the analyses of claims 2 and 5 above, while suppressing strain of the mass flow sensor, it would have been obvious to one of ordinary skill in the art at the time of invention to employ a metal gasket in such a manner as taught by Ikeda.

Regarding claims 8-10, see the analysis of claim 4 above, which is incorporated by reference.

Regarding claims 11-13, see the analysis of claim 5 above, which is incorporated by reference.

13. Claims 3 and 7 are rejected under 35 U.S.C. 103(a) as being obvious over James in view of Ikeda, and further in view of Kuno.

Neither James nor Ikeda discloses correcting output drift to pressure of the mass flow rate sensor part with use of the pressure signal. However, Kuno identifies an accuracy problem associated with pressure and teaches the claimed solution, as best understood (see Kuno, column 9 lines 35-47). It would have been obvious to one of ordinary skill in the art at the time of invention to correct output drift to pressure of the mass flow rate

sensor part with the use of the pressure signal in the James-Ikeda device, as taught by Kuno, so as to compensate for error associated with pressure.

14. Claims 1, 2, 4-6 and 8-13 are alternatively rejected under 35 U.S.C. 103(a) as being obvious over Ikeda in view of James.

See the analyses set forth in paragraphs 5, 6, 8 and 9 of the double-patenting rejection above, the obviousness rationale of which is incorporated herein by reference.

15. Claims 3 and 7 are alternatively rejected under 35 U.S.C. 103(a) as being obvious over Ikeda in view of James, and further in view of Kuno.

See the analysis set forth in paragraph 13 above.

### ***Conclusion***

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patent 4,680,963 discloses the use of similar pressure and temperature compensation with the use of a semiconductor sensor.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to WILLIAM MCCALISTER whose telephone number is

(571)270-1869. The examiner can normally be reached on Monday through Friday, 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Huson can be reached on 571-272-4887. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/WILLIAM MCCALISTER/  
Examiner, Art Unit 3753

/Stephen M. Hepperle/  
Primary Examiner, Art Unit 3753

WM  
9/16/08